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FACTORS AFFECTING THE FUTURE OF WATER TRANSPORTATION IN THE UNITED STATES.

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The usefulness of inland waterways for transportation, and, doubtless, the extent to which they will be made available for use, cannot be determined merely by considering the capital costs and operating expenses of moving freight by rail and by water. Useful as such a study may be, it can supply only a part of the data required. The problem is a complex one containing several economic factors, some of which seem to be neglected in most discussions of the functions of waterways.

The use of most of the inland waterways of the United States has declined during recent years as the result of two causes, the chief of which has been that the railways have provided most sections of the country with adequate transportation that was usually as cheap as, and almost always better than, could be provided by the waterways. Where the transportation service was performed by the railways without difficulty there was little justification for the expenditure of large sums of money, either public or private, in the improvement and extension of waterways.

Another major cause of the declining use of waterways has been the growing difficulty of maintaining the navigability of our rivers. The practical de-forestation of large areas in the eastern half of the United States has so enhanced the seasonal variation in the flow-off of water as to cause our streams to alternate between periods

of high flood and extreme low water. Our waterways have been more than neglected; their navigability in a large measure has been destroyed by the wasteful cutting of our forests, and by the unscientific methods of tillage whereby the amount of silt thrown into the streams to form bars has become so great as to make it impossible for the rivers to maintain channels as deep and as wide as they formerly had.

The fact that for this and other reasons our inland waterways are not now used so extensively as they have been in the past does not prove that waterways adapted to present commercial needs and kept up to date technically will not be of large future use. One reason why the present light traffic on our waterways does not indicate that they are to continue to be of small service is that there is little prospect of any considerable future reduction in the costs of moving traffic by rail. During the past ten years the unit expense of handling freight by rail, for reasons patent to every student of economics, has grown larger in spite of the fact that the rapid rise in the volume of traffic has, in consequence of the operation of the law of diminishing costs in the transportation business, tended to keep down ton-mileage expenses in the freight service. The tendency towards higher cost is noticeable in bulk traffic as well as in package freight.

Furthermore, and what is still more important, there are reasons for believing that railway transportation in the United States is to be gradually reorganized in such a way as largely to increase the cost of the service. Up to the present time the ideal of the traffic manager has been, and it is still his ideal, to move freight in the largest possible car-load and train-load units. The greater share of the tonnage of American railroads consists of bulky commodities,—such as coal, iron ore, lumber, and grain,—

which can be handled not only in car load lots but in train loads; and which, from the size of our country, must be moved long distances in order to reach the manufacturing centers of the United States and the primary markets within and without our borders. Consequently the aim of the traffic officials has been to build up a transportation machine adapted to the economical movement of this kind of traffic.

Our railroads have been extremely successful and it has been most fortunate for our country that such has been the case. It seems clear, however, that the present freight service of American railroads, efficient as it is, will not long be adapted to doing the transportation work required in effecting exchanges as business is being organized. Time has come to be such an important factor in business that speed and certainty of transportation, although more expensive, may prove to be much more economical. In England, France, and Germany the railroad freight service has for some time been organized so as to accomplish the quick movement and schedule delivery of parcels, packages, and general commodity freight. Such an organization of the rail transportation service is much more easily developed where there is a division of the transportation work between the railroads and the waterways. The division of traffic between the two agencies makes possible the close coördination of railroad freight traffic with the wholesale and retail trade. This coördination enables the merchant to reduce capital cost and makes it possible for the manufacturer to lessen both capital and warehousing expenses by permitting him to make frequent deliveries in small units. This method of conducting the mercantile, manufacturing, and transportation businesses meets the needs of densely populated and highly developed industrial countries such as Germany, France, and particularly Great Britain.

Such an organization of the business of transportation as has been worked out in the three European countries just mentioned does not result in as low average freight rates by rail as prevail in the United States; but the costs of wholesale and retail distribution and of many manufacturing activities are undoubtedly less than they would be were the people of Europe served almost entirely by railroads and not by railroads and waterways. Our dependence upon railroads, almost exclusively, for the movement of bulky commodities long distances even at low average rates, while we at the same time neglect the development and use of our inland waterways, does not necessarily mean that we have organized our work of production and distribution in the most economical manner. Indeed, there can be little doubt that, as social and industrial conditions in the United States approach more closely those prevailing in Europe, we shall find it increasingly desirable to provide ourselves both with well-developed waterways for handling much of our bulky traffic and with railroads more efficient than present conditions permit them to be in the handling of package freight. We, as well as Europe, will find it profitable to minimize capital and warehousing costs.

The use of American waterways in the future will naturally depend in no small degree upon who constructs and maintains them. It is practically certain that all the important works of transportation improvement will, in the future, be executed by the United States government. This means that the work eventually will be more systematically done and that the routes selected for development will be of interstate and national importance. I am not unaware of the present lack of system in the methods by which the United States government now spends the public funds in the improvement of inland navigation.

None the less, I am convinced that the many powerful influences now operating are certain to bring about a complete change in the waterways policy of the United States government. We are apparently passing through a transition period as regards the construction of waterways. Many of the earlier works were executed for local purposes by corporations which were sometimes industrial companies and sometimes common carriers. The larger works were constructed by the states; now there is little probability that either corporations or the states will, except in so far as the states may coöperate with the federal government, invest capital in waterways. The works required for business needs are mainly interstate and national in character. This is so plainly the case that there is rapidly growing a demand on the part of the public that the entire net work of American waterways shall be improved and extended systematically by one authority, with reference to the economic and social needs of the entire nation. In the future but small place in the development and control of waterways will be occupied either by the states or by private corporations.

Possibly the factor of most significance with regard to the future use of American waterways is the growing appreciation on the part of the people of the United States of the vast importance of water as a natural resource that should be utilized as fully as is practicable. The water that falls in rain and snow over our vast territory, like the soil upon which it descends, is a permanent natural resource that can be definitely measured and can be utilized as fully as the agricultural, industrial, social, and navigation needs of the country require. Until recently we have thought of this water resource mainly in connection with navigation; now we are studying it with reference not only to navigation but also to the irrigation

of our arid lands, to the development of the immensely valuable water power, and to the redemption of overflowed swamp areas. To make our water useful for these purposes, as well as to supply ourselves with lumber and fuel, we are setting about systematically to maintain and restore our forests. Unquestionably our appreciation of the necessity of conserving and using the entire water resources of the country simultaneously for irrigation, water power, navigation, and for the people of our cities, will hasten the movement for the development of our navigable ways; moreover, stream control for purposes of commerce will come more quickly because it will hasten the reclamation of vast areas of reclaimable swamp lands.

Conclusion.

Instead of attempting to discuss in detail the many factors affecting the future of water transportation in the United States, the following conclusions are submitted as a basis for discussion:

1. The internal commerce of the United States is growing rapidly and is certain to increase with accelerating speed. The demand for economical transportation facilities for the movement of bulk traffic will not lessen, but will increase—at least for some time to come. It will apparently be economically desirable that the larger trunk line water routes of the United States shall be adapted to commercial uses.
2. The necessity for the development of our waterways is emphasized by the fact that any considerable future reductions in the costs of rail transportation are improbable.
3. The service of American railroads will probably be changed so as to permit the handling of a large volume of commodity freight expeditiously and in small units.

This will tend to make rail transportation costs higher instead of lower.

4. The foregoing facts suggest that the following law is valid: The economy of employing both railroads and waterways for the performance of the transportation services becomes greater in every country and in particular sections of a country with the increase in population and the development and specialization of industry.

5. The future use of American waterways for navigation will be increased by the conserving of our entire water resources for all purposes to which they may be put.